Special Committee on Desalination and Recycling

Item 3a

Subject: **Final Report on the Assessment of Existing Seawater Desalination Integration Practices**

Final Report on the Assessment of Existing Seawater Desalination Integration Practices

Special Committee on Desalination and Recycling
Item 3a
April 9, 2012

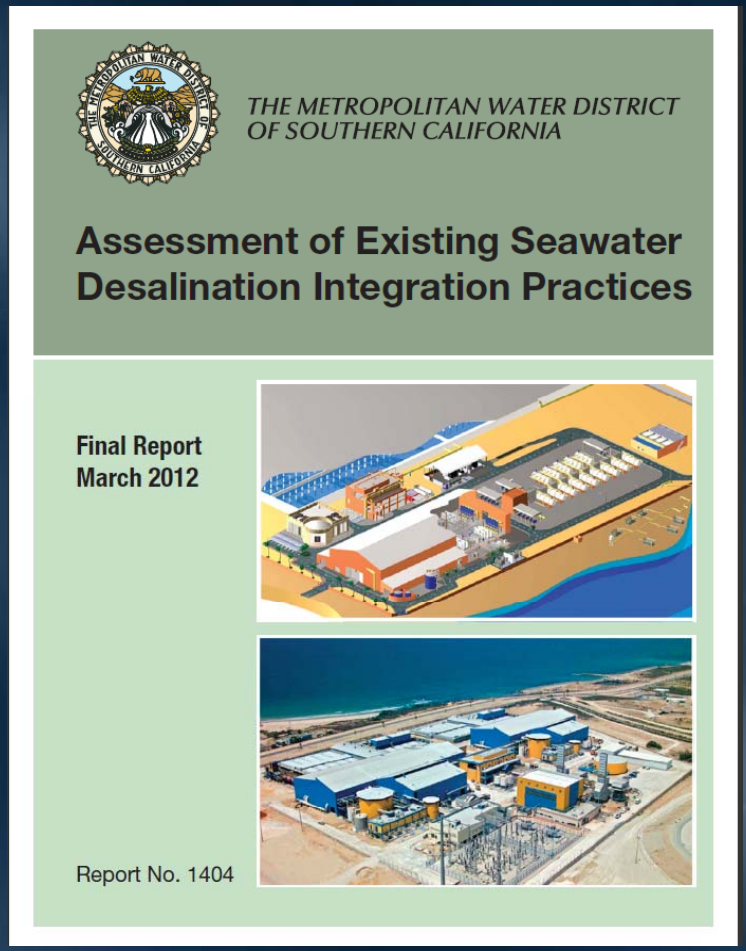
Background

- IRP Foundational Action
- Several local projects are considering integration using MWD's distribution system
- Survey of ten recent seawater desalination projects:
  - Understand system integration strategy
  - Identify potential challenges
  - Lessons learned

Valdelentisco, Spain

Final Report

- Preliminary results presented to committee July 2011
- Contents
  - Summary tables
  - Findings
  - Lessons learned
  - Bibliography
  - Complete surveys

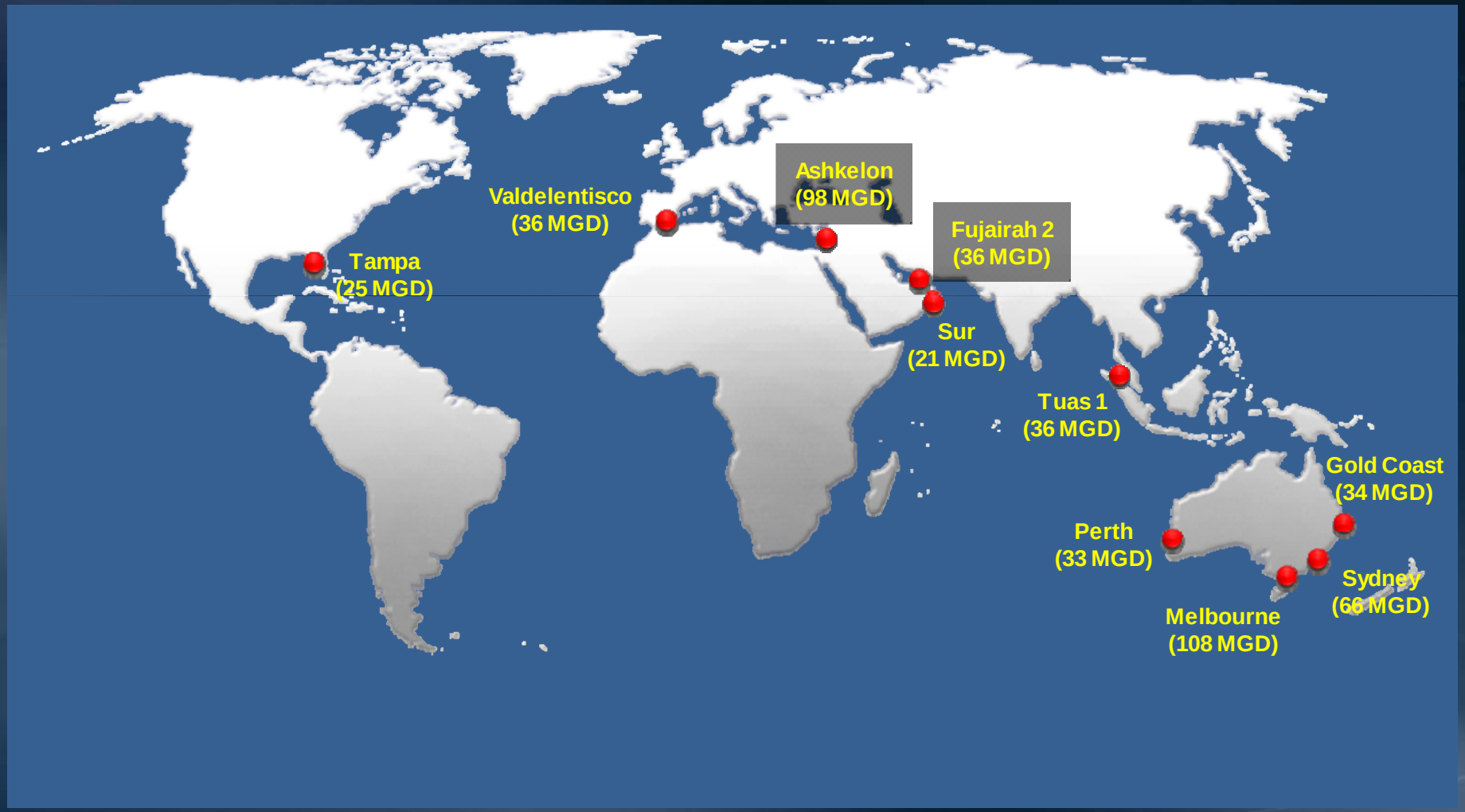

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Assessment of Existing Seawater Desalination Integration Practices

Final Report
March 2012

Report No. 1404

Surveyed Plant Locations



Summary Tables

Gold Coast (Australia)	
Category	**Result(s)**
General	
Capacity	33 MGD
On-Line Date	2009
Reason(s) Selected	• Similar capacity to SWRO plants proposed in the Metropolitan service area • Regulatory climate similar to the US
Treatment Processes	
Intake	Dedicated open ocean intake
Pretreatment	• Drum screens • pH adjustment • Coagulation
Filtration	Dual media filters (sand + anthracite)
RO Configuration	Partial second pass
Post-Treatment	• Lime addition • CO_2 addition
Primary Disinfection	Free chlorine
Secondary Disinfection	Free chlorine @ 0.2 - 0.5 mg/L
Water Quality Management	
Water Quality Goals	
Chloride	50 mg/L
Bromide	0.1 mg/L
Boron	1 mg/L
Sodium	None reported
Total Dissolved Solids	220 mg/L
Alkalinity	None reported
pH	None reported
Langelier Saturation Index	None reported
Calcium Carbonate Precipitation Potential	-5 to -3 mg/L
Boron Management Strategy	Partial two-pass RO
Parameters of Concern	None reported

Gold Coast (Australia)	
Category	**Result(s)**
Integration Approach	
Blending Location	15.6 mile pipeline with in-pipe blending at the point of connection to the regional water grid
Blending Supplies	Surface water supplies in the existing regional water grid
Onsite / Offsite Storage	8 MG tank at the SWRO plant
Operating Characteristics	Variable depending on available surface and groundwater supplies
Prior Water Quality Studies	Pilot testing to ensure water quality standard would be achieved
Other Blending Strategies	None reported
Lessons Learned / Significant Issues / Key Points	
• A seawater desalination plant can be a good emergency source of supply, even in wet weather; during recent floods, the surface water treatment plants were not able to adequately remove the turbidity; the SWRO plant was ramped up to full capacity to supply potable water during this event • Quality control and factory testing on some material components can help avoid issues during installation and commissioning	

Key Findings

- Bromide
- Boron
- Corrosion
- Advance planning studies
- Blending practices
- Intertie Issues
- Operations

Melbourne, Australia

Distribution

- Consultant presentation won “Best Paper” at the AWWA/AMTA conference in February
- Available on MWD’s member agency website
  - Provided to member agencies in Seawater Desalination Program
- Available on request in electronic format

Questions?